

SCIENTIFIC PRESENTATIONS: SLIDE DESIGN AND DELIVERY SKILLS

Prepared by Prof. Tatiana Teslenko
Dept. of Mechanical Engineering

Learning Objectives

- Identify the purpose, advantages and drawbacks of oral presentations
- Describe the types of presentations
- Select a delivery method
- Follow the steps to plan your oral presentation
- Discuss volume, pitch, pace and enunciation
- Discuss elements of body language
- Learn to use segues in team presentations
- Use a checklist for an effective oral presentation
- Discuss cross-cultural context for presentations

Oral presentations vary in style, complexity and formality

Purpose: to inform, to instruct, to persuade

- convention speeches,
- reports at national meetings,
- technical briefings for colleagues, and
- speeches to community groups.

Advantages:

- You can use body language to establish credibility and rapport with your audience.
- Oral presentations allow for give-and-take.

Drawbacks:

- One attempt is all you get to win over an audience.
- It is limited in the amount and complexity of information that can be presented.

Avoiding Presentation Pitfalls

- The podium or lectern can be a lonely and intimidating place.
- Oral presentations often turn out to be boring, confusing, unconvincing, or too long.
- Avoid such difficulties through careful analysis, planning, and preparation.

Speaker:

- Makes no eye contact
- Seems like a robot
- Hides behind the lectern
- Speaks too softly/loudly
- Sways, fidgets, paces,
- Rambles
- Loses her/his place
- Never gets to the points
- Fumbles with notes
- Has too much material

Slides:

- Are hard to see
- Are hard to interpret
- Are out of sequence
- Are shown too rapidly
- Are shown too slowly
- Have typos/ errors
- Are word-filled
- Are non-existent

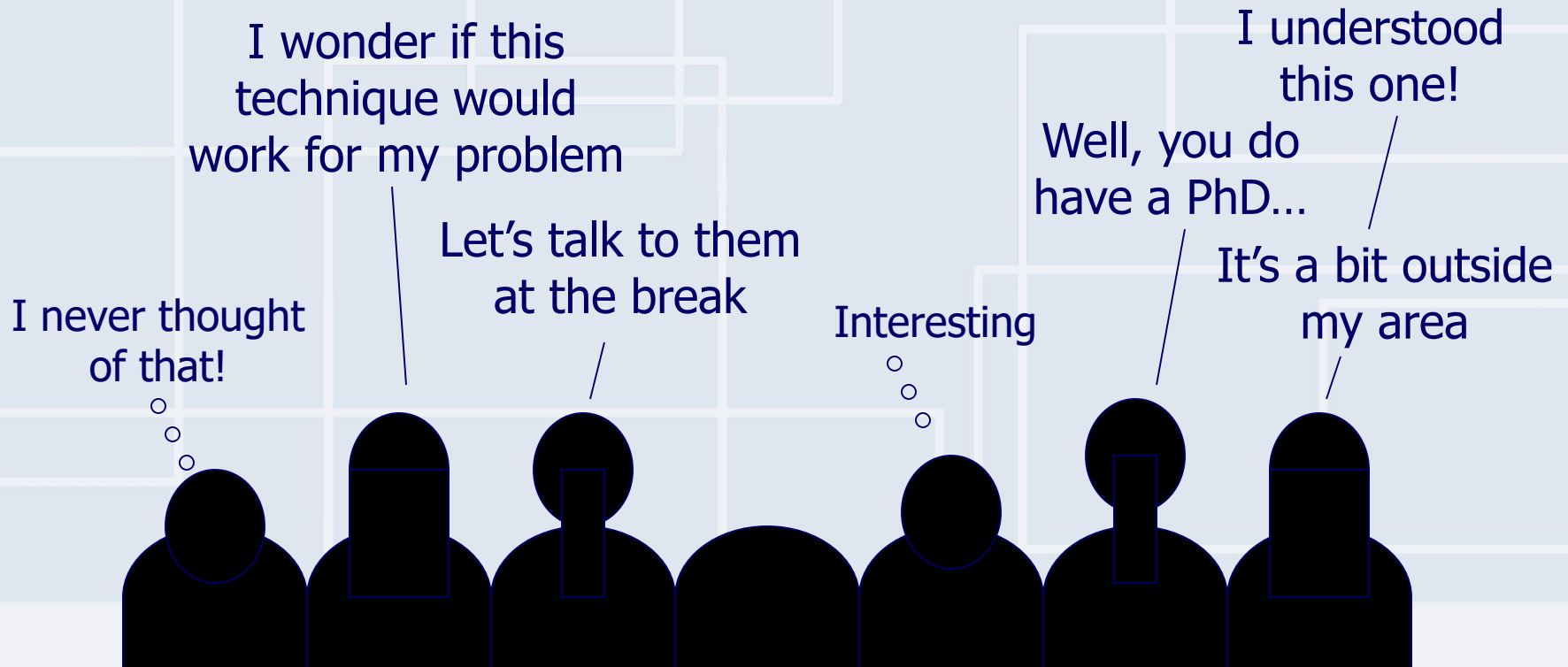
Attitude (Yours)

- Are *YOU* interested in your topic?
 - If no, get a different one!
 - If yes, ACT LIKE IT.
- If *YOU* aren't excited...
 - You can't expect
 - *OTHER* people to be!
- Don't talk down to audience
 - You know more than them about THIS
 - They know more than you about other things



Results of Good Presentations

- Interesting topic, explained at the level of the audience
- Visual aids - understandable and easy to see



Planning Your Presentation

- **Analyze your audience and purpose.** Do all you can to find out exactly who will be attending your presentation. Determine their roles within the organization. Learn about their attitudes and experiences regarding your subject.
- **Analyze your speaking situation.** The more you can discover about the circumstances, setting, and constraints for your presentation, the more deliberately you will be able to prepare.

Select a Type of Presentation

- Your primary purpose determines the type of presentation:
 - * **Informative presentations** provide facts and explanations.
 - * **Training/instructional presentations** show how to perform a task.
 - * **Persuasive presentations** attempt to gain support or change an opinion.
 - * **Action plan presentations** motivate people to take action.
 - * **Sales presentations** inform and persuade.

Select a Delivery Method

- * **Memorized delivery** involves memorizing your speech and is risky.
- * **Impromptu delivery** involves speaking “off the cuff” and works if you are good at that.
- * **Scripted delivery** involves following a script and is safe, though sometimes boring.
- * **Extemporaneous delivery** involves careful planning, practice, and following your notes. It is the safest and most advisable method.

Preparing Your Presentation

To stay in control and build confidence, plan the presentation systematically:

- **Research your topic.** Be prepared to support each assertion, opinion, conclusion, and recommendation with evidence and reason.
- **Aim for simplicity and conciseness.** Boil the material down to a few main points. A typical attention span is about twenty minutes.
- **Anticipate audience questions.** Consider those parts of your presentation that listeners might question or challenge.

Outline Your Presentation

For most presentations, follow the introduction-body-conclusion outline format.

In the introduction, set the stage (capture your audience's attention, establish credibility, and preview your presentation).

In the body, use small chunks of information and clear transitions.

In the conclusion, tie everything together.

Engage your audience

Be excited about your topic. Are you interested in your topic? If yes, ACT LIKE IT. If **YOU** aren't excited, you can't expect **OTHER** people to be!

Manage your speaking situation. Be responsive to listener feedback; stick to your plan; leave listeners with something to remember; and allow time for questions and answers.

Develop effective delivery skills:

- **Appropriate** orientation towards the screen
- Immediate **positive** connection through eye contact
- **Adequate** voice projection
- **Confident** and unambiguous body language
- **Energetic** and upright posture

Delivering Your Presentation

Consider the following simple steps to make your actual presentation enjoyable instead of terrifying:

- **Rehearse your delivery.** Hold ample practice sessions to become comfortable with the organization and flow of your presentation. If possible, rehearse using the actual equipment in the actual setting.
- **Check the room and setting beforehand.** Make sure you have enough space, electrical outlets, and tables for your equipment.

Delivering Your Presentation (continued)

- **Cultivate the human landscape.** Get to know your audience, be reasonable, display enthusiasm and confidence, and don't preach.
- **Keep your listeners oriented.** Open with a clear and engaging introduction, give concrete examples, provide explicit transitions, and review and interpret periodically.
- **Plan for how you will use any non-computer visual aids.** Prepare, organize, and time the visuals with your oral delivery.

Delivering Your Presentation (continued)

- **Manage your presentation style.** Use natural movements and reasonable postures; adjust volume, pronunciation, and rate; and maintain eye contact.
- **Manage your speaking situation.** Be responsive to listener feedback; stick to your plan; leave listeners with something to remember; and allow time for questions and answers.

Manage Your Presentation Style

- Is your back to the audience?
- Are you hiding behind the podium?
- Are your hands/face motionless?
- Are you staring at
 - your instructor/supervisor?
 - your laptop?
 - at the screen?

Use natural movements and a reasonable posture

- Use appropriate hand gestures
- Videotape yourself
- Practice with friends
- Don't point with your finger
- Do not keep repeating the same gestures as you talk
- Make sure that your gestures are appropriate for a specific culture (e.g. Bulgarian culture)

Delivering Your Presentation

Rehearse your delivery.

- Hold ample practice sessions to become comfortable with the organization and flow of your presentation.
- If possible, rehearse using the actual equipment in the actual setting.

Check the room and setting beforehand.

- Make sure you have enough space, electrical outlets, and tables for your equipment.

Keep your listeners oriented.

- Open with a clear and engaging introduction, give concrete examples, provide explicit transitions, and review and interpret periodically.

Segue: transition between speakers

- Chen Li: Now Anna is going to talk to you about the most important delivery component of presentations: the voice. Anna?
- Anna: Thank you, Chen Li. Certainly a presentation must be heard in order for it to be effective. This is why the voice plays the most important role in delivering information; without a voice, you don't have a presentation—at least not an oral presentation! In fact, you need to consider four basic components in order to master speaking: *volume, pitch, enunciation, and pace*.

Segue: flow and cohesion

Chen Li introduces Anna and previews her topic. When Anna begins to speak, she re-iterates her topic (indicated with the underline) and previews how her topic is organized (indicated in italics).

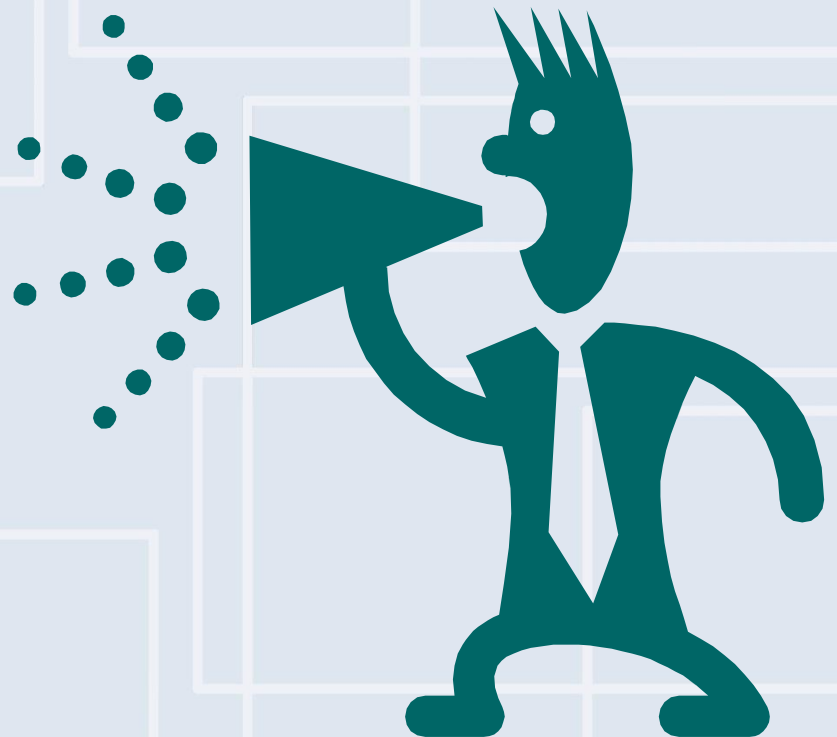
Seamlessly moving from one piece of information to another makes your presentation more engaging and professional.

Presentation Anxiety

- Sometimes nerves make for fast talking.
- Calm down. Pay attention to pronunciation and enunciation.
- It's not a race.
- Bring some water (if necessary):
 - Bottles (if you can work a cap)
 - A glass (if you don't have a free hand)
 - Don't drink a case of Mountain Dew!

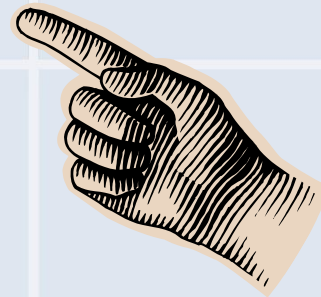
Voice Projection

Adjust volume,
pronunciation,
pitch and
pace



Body Language

- Eye Contact
- Smile
- Posture
- Gestures
- Movement
- Right here. See?
 - Don't point at your laptop screen
 - They can't see it.



Checklist: Content

- Stated a clear purpose
- Created interest in the topic
- Showed command of the material
- Supported assertions with evidence
- Used adequate and appropriate visuals
- Presented a clear line of reasoning
- Gave the right amount of information

Checklist: Style

- Seemed confident and relaxed
- Showed appropriate enthusiasm
- Used appropriate gestures
- Used appropriate tone, volume and delivery rate
- Had good posture and appropriate eye contact
- Avoided “fillers” and clichés

eye contact	indirect, not sustained, looking at the screen/laptop, staring at somebody	direct, sustained
facial expression	none or distracting	natural
gestures	“closed”, repetitive, lecturing, too few or too small, pointing	appropriate
posture	tilted, slumped, leaning away, “closed”, unnatural, hands in pockets, turning your back to the audience	“open”, confident,
voice	inaudible (poor projection)	clear; audible
tone	monotonous or “pitching up”	varied
delivery rate	too slow; “speeding up”	varied, with adequate pauses
language	fillers; jargon; clichés	crisp; effective
slides	too many slides, irrelevant animation, sloppy images, cluttered slides, lack of parallelism or poor proofreading	clear; relevant; professional looking

Guidelines for Readable Visuals

- Make visuals large enough to be read anywhere in the room.
- Don't cram too many words, ideas, designs, or type styles into a single visual.
- Distill the message into the fewest words and simplest images possible.
- Chunk material into small sections.
- Summarize with key words, phrases, or short sentences.

Guidelines for Readable Visuals (continued)

- Display only one point per visual—unless previewing or reviewing parts of your presentation.
- Give each visual a title that announces the topic.
- Use color, sparingly, to highlight key words, facts, trends, or the bottom line.
- Use the brightest color for what is most important.
- Label each part of a diagram or illustration.
- Proofread each visual carefully.

Choosing the Right Media Format

- Presentation software has become the standard medium for oral presentations (e.g. *PowerPoint*, *Apple's Keynote* or *Open Office's Impress*).
- Critics argue that the mere content outline provided by the slides can oversimplify complex issues, and that an endless list of bullets or animations, colors, and sounds can distract from the deeper message.
- Other options include chalkboards, dry-erase boards, transparencies, flip charts, and handouts.
- You should choose the medium that best fits the situation.

README.TXT

- Do not attempt to put all the text, code, or explanation of what you are talking about directly onto the slide, especially if it consists of full, long sentences. Or paragraphs. There's no place for paragraphs on slides. If you have complete sentences, you can probably take something out.
- If you do that, you will have too much stuff to read on the slide, which isn't always a good thing.
- Like the previous slide, people do not really read all the stuff on the slides.
 - That's why it's called a "presentation" and not "a reading" of your work
- Practice makes perfect, which is what gets you away from having to have all of you "notes" in textual form on the screen in front of you.
- Utilize the Notes function of PowerPoint, have them printed out for your reference.
 - **The audience doesn't need to hear the exact same thing that you are reading to them.**
 - The bullet points are **simply talking points** and should attempt to summarize the big ideas that you are trying to convey
- If you've reached anything less than 18 point font, for God's sake, please:
 - Remove some of the text
 - Split up the text and put it on separate slides
 - Perhaps you are trying to do much in this one slide?
- **Reading a slide is annoying.** We *can* do that (even if we don't).

Font Size

- You are close to your monitor
- Your audience is far from the screen

Tahoma	TNR	Courier	Comic	Lucida Sans
32 pt	32 pt	32 pt	32 pt	32 pt
28 pt	28 pt	28 pt	28 pt	28 pt
24 pt	24 pt	24 pt	24 pt	24 pt
20 pt	20 pt	20 pt	20 pt	20 pt
18 pt	18 pt	18 pt	18 pt	18 pt
16 pt	16 pt	16 pt	16 pt	16 pt
14 pt	14 pt	14 pt	14 pt	14 pt
12 pt	12 pt	12 pt	12 pt	12 pt
10 pt	10 pt	10 pt	10 pt	10 pt

The defaults of PowerPoint are not based on research in communication or cognitive psychology

The diagram illustrates a PowerPoint slide master layout. At the top, a dashed box contains the text "Click to edit Master title style" and the label "Title Area for AutoLayouts". Below this, a larger dashed box contains a bulleted list: "Click to edit Master text styles", "– Second level", "• Third level", "– Fourth level", and "» Fifth level". A blue diagonal banner with the text "Poor starting place" is overlaid on the list. At the bottom, three dashed boxes are labeled "Date Area" (containing <date/time>), "Footer Area" (containing <footer>), and "Number Area" (containing <#>). The label "Object Area for AutoLayouts" is positioned at the bottom right of the main content area.

- Click to edit Master text styles
 - Second level
 - Third level
 - Fourth level
 - » Fifth level

Default slide layouts in PowerPoint result in an ineffective topic-subtopic structure.

Click to edit Master title style

- Click to edit Master text styles
 - Second level
 - Third level
 - Fourth level
 - » Fifth level



TOPIC

Nigeria: Her People, Culture and Economy

SUBTOPICS

- 5th largest oil exporter to the US
- 9th largest oil producing country in the world
- 31st biggest economy in the world
- 25TH fastest growing economy in the world
- Home to 20% of black persons in the world

Presenters often deliver verbal content that mirrors slide text.

"Benefits to the company include a decrease in absenteeism, increased productivity, and savings in employee insurance premiums."



Benefits to the Company

- Decrease absenteeism
- Increased employee Productivity
- An obese person will have an average of \$8,315 in medical bills a year by 2018
- Compared with \$5,855 for an adult of a healthy weight.
- That's difference of \$2,460 a year!

Simultaneous speech and text are processed by the same part of the brain, splitting attention.

"Benefits to the company include a decrease in absenteeism, increased productivity, and savings in employee insurance premiums."



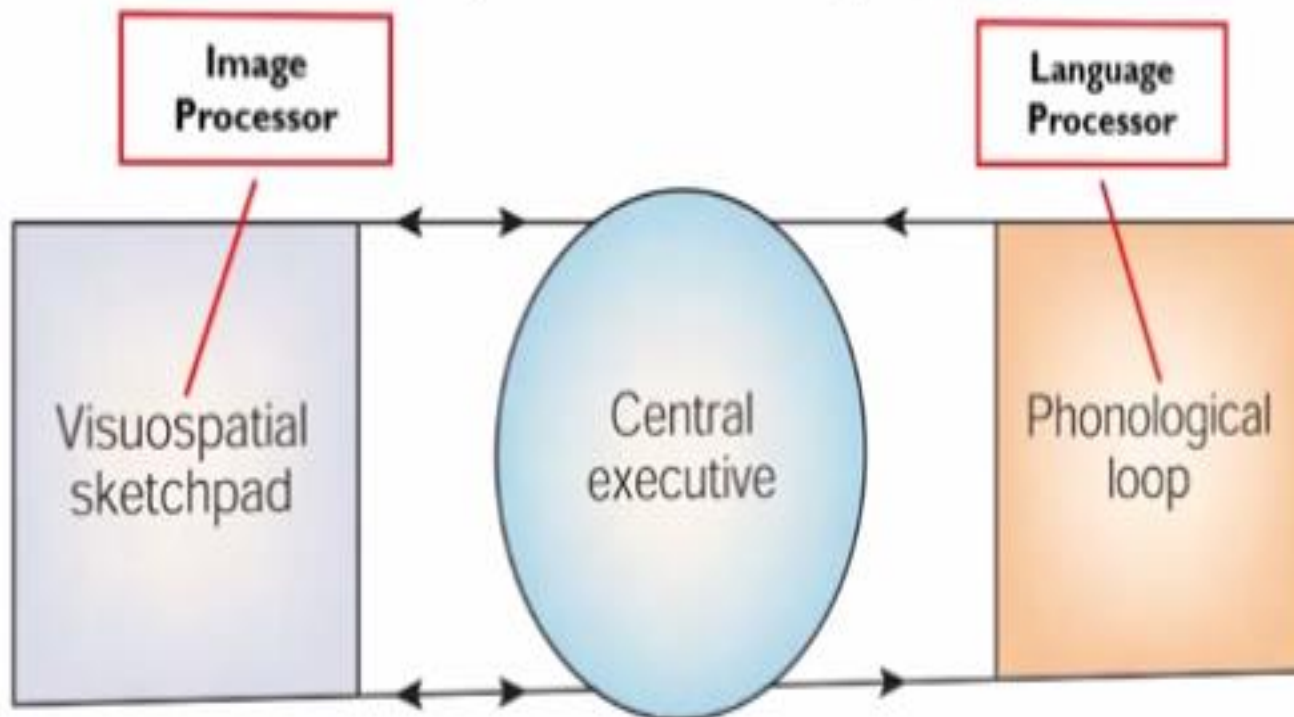
Benefits to the Company

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- That's a difference of \$2,460 a year!



Working memory models suggest presenting information both visually and verbally.

Baddeley's Model of Working Memory



(Baddeley, 2003, Nature Reviews Neuroscience)

PowerPoint and Space Shuttle *Columbia* Disaster

On February 1, 2003, the space shuttle *Columbia* burned up upon re-entering the Earth's atmosphere. It had suffered damage during launch when a piece of insulation foam had broken off the shuttle and damaged the wing.

While the shuttle was in orbit, NASA personnel tried to assess the damage and to recommend a course of action. It was decided that the damage did not seem serious enough to pose a significant threat, and re-entry proceeded on schedule.

Lower-level suggestions that the shuttle fly close to a satellite that could have photographed the damage, for a clearer assessment, were overlooked and ultimately ignored by the decision makers.

The *Columbia* Accident Investigation Board concluded that a *PowerPoint* presentation had played a role in the disaster.

Engineers presented their findings in a series of confusing and misleading slides that obscured errors in their own engineering analysis.

One especially crucial slide was so crammed with data and bullet points and so lacking in analysis that it was impossible to decipher accurately (Tufte, 2003, pp. 8-9).

Here is this slide.

The common practice of using *PowerPoint* has received harsh criticism



Review of Test Data Indicates Conservatism for Tile Penetration

- The existing SOFI on tile test data used to create Crater was reviewed along with STS-87 Southwest Research data
 - Crater overpredicted penetration of tile coating significantly
 - Initial penetration to described by normal velocity
 - Varies with volume/mass of projectile (e.g., 200ft/sec for 3cu. in)
 - Significant energy is required for the softer SOFI particle to penetrate the relatively hard tile coating
 - Test results do show that it is possible at sufficient mass and velocity
 - Conversely, once tile is penetrated SOFI can cause significant damage
 - Minor variations in total energy (above penetration level) can cause significant tile damage
 - Flight condition is significantly outside of test database
 - Volume of ramp is 1920cu in vs 3 cu in for test



2/21/03

6



January 16, 2003

January 24, 2003

February 1, 2003

Review of Test Data Indicates Conservatism for Tile Penetration

- **The existing SOFI on tile test data used to create Crater was reviewed along with STS-107 Southwest Research data**
 - **Crater overpredicted penetration of tile coating significantly**
 - **Initial penetration to described by normal velocity**
 - Varies with volume/mass of projectile (e.g., 200ft/sec for 3cu. In)
 - **Significant energy is required for the softer SOFI particle to penetrate the relatively hard tile coating**
 - Test results do show that it is possible at sufficient mass and velocity
 - **Conversely, once tile is penetrated SOFI can cause significant damage**
 - Minor variations in total energy (above penetration level) can cause significant tile damage
 - **Flight condition is significantly outside of test database**
 - **Volume of ramp is 1920cu in vs 3 cu in for test**

Data on danger to shuttle is inconclusive

Recommendation: Visual inspection via space walk or spy satellite photography

Modelling Program: Crater modeled damage caused by foam chunk equal to size of ramp that struck <i>Columbia</i> ↓	Prev. Flight (STS-87) Data: Analysis of foam impact that occurred on previous shuttle flights ↓	Physical Testing: MOD study (1999) analyzed damage to thermal protection system from collisions with objects ↓
<u>Key Data:</u> Shows potential for dangerous damage in thermal protection tiles ↓	Found an unacceptable level of damage in a non-critical area ↓	None relevant ↓
Inconclusive: Predicts more damage than has occurred in actual conditions; only predicts tile damage and fails to provide data on leading edge of wing	Inconclusive: Represents only a single flight; circumstances on <i>Columbia</i> flight are different	Inconclusive: Assumes debris chunk striking spacecraft has volume of 3 in ³ vs actual of 1920 in ³

The Board's findings:

“As information gets passed up an organization's hierarchy, from people who do analysis to mid-level managers to high-level leadership, **key explanations and supporting information are filtered out.** In this context, it is easy to understand how a senior manager might read this *PowerPoint* slide and not realize that it addresses a life-threatening situation.

At many points during its investigation, the Board was surprised to receive similar presentation slides from NASA officials in place of technical reports. The Board views the endemic use of *PowerPoint* briefing slides instead of technical papers as an illustration of the **problematic methods of technical communication** at NASA” (*Columbia Accident, Report, 2003, Vol. 1, 191*).

Experts advocate an assertion-evidence slide structure

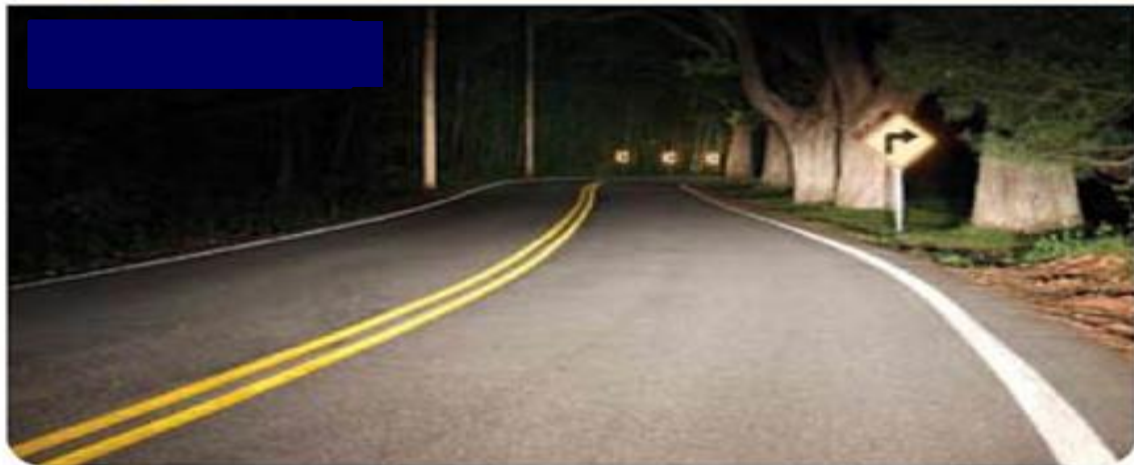
- The structure calls for a succinct **sentence headline** that states the main assertion of the slide
- The structure also calls for supporting that sentence-assertion headline with **visual evidence**
- The goal is to **overcome the weak defaults** of PowerPoint

Xenon headlights illuminate signs better than halogen headlights do

Halogen Headlight



Xenon Headlight



In an assertion-evidence slide, the headline is a sentence, no more than two lines, that states the slide's message

**Supporting photograph, drawing, diagram, film,
or graph—no bulleted lists**

**Call-outs, if needed:
no more than two lines**

Title of Presentation in Initial Capitals: 36 Points, Calibri Bold

Name

Name

Name

Department

Institution

Date

**Replace this box with key image to introduce
talk's scope, importance, or background**

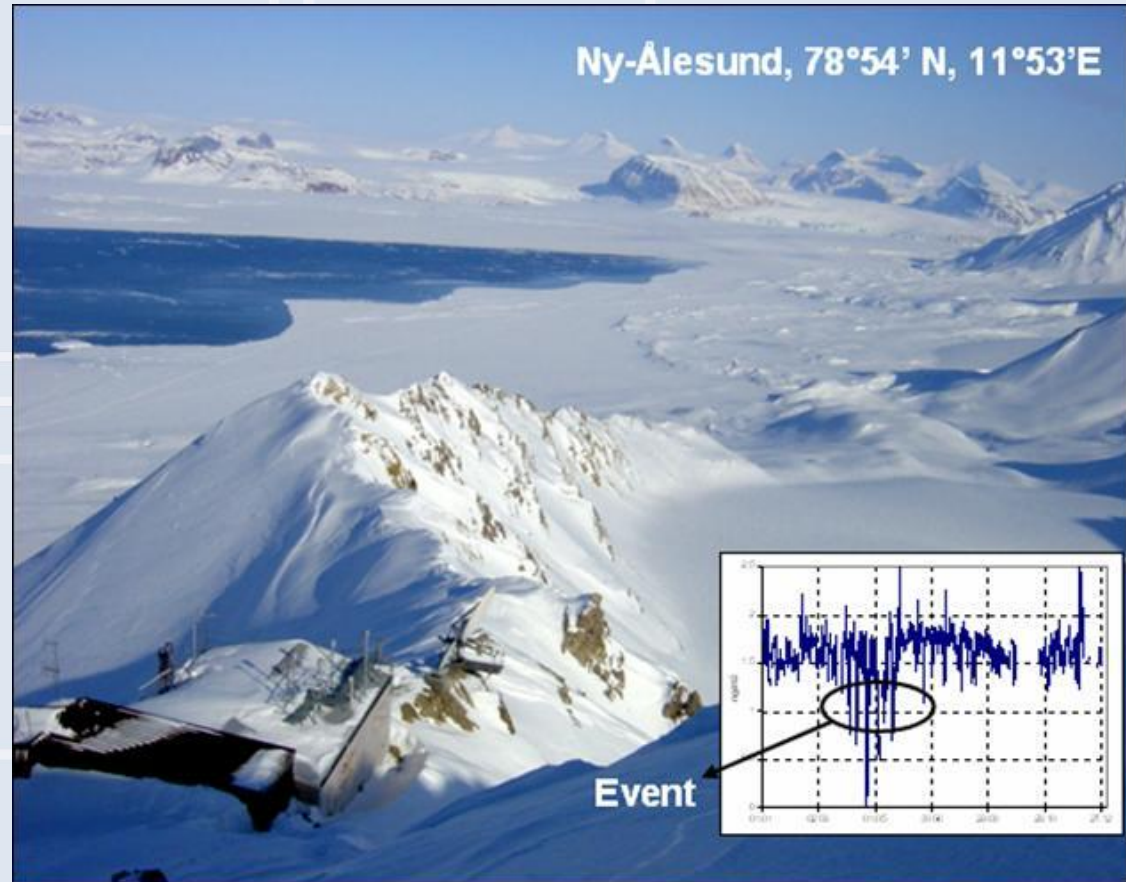
**Replace with
your Logo**

Atmospheric Mercury Depletion Events in Polar Regions during Arctic Spring

Katrine Aspmo
Torunn Berg
Norwegian Institute for Air Research

Grethe Wibetoe
University of Oslo, Dept. of Chemistry

16 June 2004



Outline

- Title Slide
- Introduction
- Research Objectives
- Your Work
- Results
- Conclusions

How to make the outline useful

- The previous slide didn't "help" your audience
- If you have an outline slide, make it **USEFUL**
 - Everyone introduces their topic (hopefully)
 - Everyone explains their work and gives results
 - What is specific to **YOUR** talk?
- Talk length determines the need for an outline
 - If your talk is 45 minutes, maybe you need an extensive outline!
 - If your talk is 5 minutes... probably not.

This presentation focuses on... (complete this sentence, but go no more than two lines)

Image for
Topic 1

Topic 1

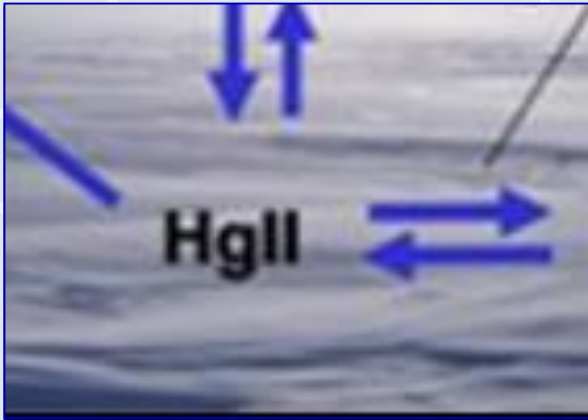
Image for
Topic 2

Topic 2

Image for
Topic 3

Topic 3

This talk traces what happens to mercury after it depletes from the atmosphere in arctic regions



Theory for mercury cycling



Measurements from Station



Environmental implications

This headline makes an assertion on the first topic in no more than two lines

**Image(s)
supporting
above assertion**

If necessary, identify key assumption or background for the audience— but keep it to two lines (18–24 point type)

This sentence headline makes an assertion on the second topic in no more than two lines

Call-out, if necessary: keep to
one or two lines

Call-out, if necessary: keep to
one or two lines

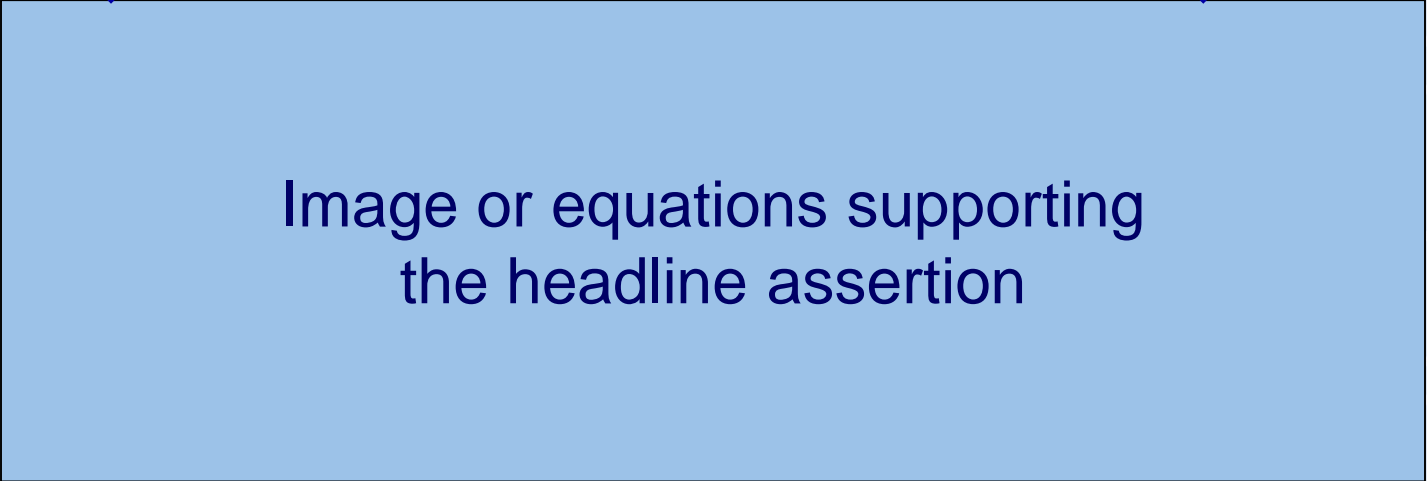


Image or equations supporting
the headline assertion

Call-out, if necessary: keep to
one or two lines

**This sentence headline makes an assertion
on the third topic in no more than two lines**



Image supporting above assertion

Feature or call-out—no more
than two lines

Feature or call-out—no more
than two lines

In summary, this sentence headline states the most important assertion of the presentation

Supporting point (no more than two lines)

Another supporting point (parallel to the first)

Image that supports conclusion

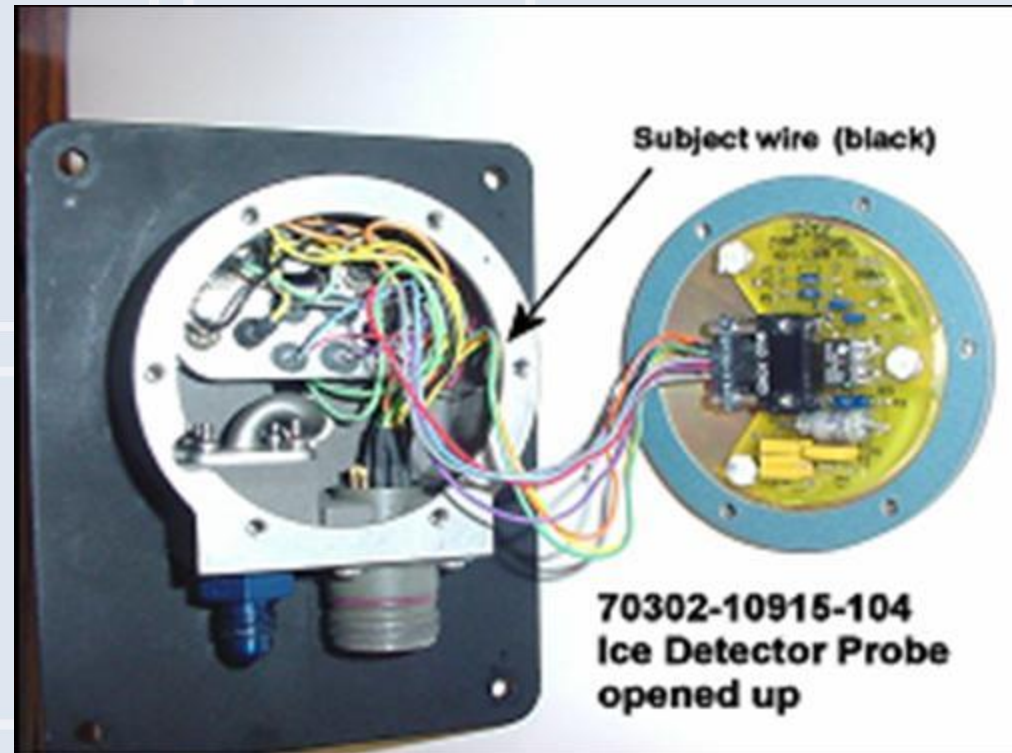
Questions?

In summary, the detector failed because of a short-circuit created by the abrasion of wire insulation

Wires not harnessed to prevent contact with housing



Short circuit to ground created where wire contacted housing



Questions?



Guidelines for Presenting Visuals

- Try not to begin with a visual.
- Try not to display a visual until you are ready to discuss it.
- Tell viewers what they should be looking for in the visual.
- Point to what is important.
- Stand aside when discussing a visual, so everyone can see it.
- Don't turn your back on the audience.
- After discussing the visual, remove it promptly.

Conclusions

- Be rehearsed and prepared.
- Memorize a brief introduction.
- Dress for success.
- Stand tall and use eye contact.
- Take charge.
- Gesture naturally.